National Park Service
U.S. Department of the Interior

Federal Lands Transportation Program

Arlington Memorial Bridge Repair & Reconstruction

The Arlington Memorial Bridge linking Washington, DC, and Arlington, Virginia is in a serious state of deterioration. (Photo © Peter Tomlinson, www.photosbypjt.com)

Mega-Project* Profile: Memorial Bridge Repair

Estimated cost: $250 million

1330% of the National Capital Region (NCR) Annual Allotment

Percentage of the NPS FLTP Annual Allotment: 125%

Project Description. The condition of Arlington Memorial Bridge is degrading quickly. The Memorial Bridge has reached the end of its design life and requires extensive rehabilitation, to include full replacement of its center span. Corrective measures are needed now to keep the structure open to the public until the rehabilitation can be performed.

Background. Symbolically connecting the North and the South, the Bridge was constructed in 1932, crossing the Potomac River between the Lincoln Memorial and Arlington Cemetery.

The Memorial Bridge, of neoclassical design, contains a center bascule span, or drawbridge. Counterweights are housed below the bridge's deck surface to raise and lower the center span.

This iconic bridge, placed on the National Register of Historic Places in 1980, plays several important roles:

- It serves as a significant vehicle, bicycle, and pedestrian route for commuters, residents, visitors, and dignitaries on a daily basis;
- It is one of only five bridges connecting Virginia and the District of Columbia across the Potomac River;
- It is part of the National Highway System,

Right: Rusting and section loss in an interior trunnion post for the north truss, west bascule leaf (NPS photo)

Top: Section loss and rusting in stringers and framing for the north sidewalk at the east bascule abutment. (NPS photo)

Bottom: Typical rusting of the steel deck grid underside in the bascule span; this photo was taken at the bridge's mid-span. (NPS photo)

* Mega Projects: The NPS transportation system is supported, in part, by funds from the Federal Lands Transportation Program (FLTP). Currently, the NPS is authorized an annual budget of $268 million from the FLTP. These funds are apportioned by formula among the seven NPS Regions. Most of these funds are used for "transportation asset management" – that is, to pay for the work required to keep existing assets in good condition. There are some projects, such as a major bridge repair or ship replacement, that require a much larger amount of funding than is available on an annual basis to a Region. These we call "Mega Projects." The NPS is pursuing strategies to fund these projects.

Last Updated 2016 February

carrying more than 68,000 vehicles each day, in addition to thousands of bicyclists and pedestrians;

- The Memorial Bridge is a vital route identified in the Washington, D.C. emergency evacuation plan.

Necessary Repairs. The rehabilitation of the Memorial Bridge will require:

- replacement of the steel draw span (bascule span);
- repairs to deteriorated portions of the abutments, piers, and concrete approach spans;
- replacement of the concrete bridge deck;
- repair or replacement of all the other systems that make it a safe, functional bridge, including: lighting, drainage, pedestrian access, and safety features.

A rehabilitated Memorial Bridge would ensure a safe, long-term entrance into our Nation's Capital.

Current Status: The Memorial Bridge structure was listed as structurally deficient in its most recent biennial inspection. This is due primarily to severe corrosion of the steel in the bascule span; some support stringers and framing are missing altogether. In the event that the bascule span fails, the center section is not expected to fall into the Potomac River, but could suddenly settle, creating an abrupt six to eight inch drop in the roadway on the bridge's center section.

The bridge's sidewalks show de-lamination and spalling of the concrete surface, and displacement of the granite curbs. Aluminum structures have already been placed across sections of the bridge's sidewalks to protect pedestrians from falling at deteriorated areas.

There is also significant deterioration of the concrete in the arch spans, several of which are deficient as well. These will require extensive rehabilitation. Finally, there are widespread areas of patching and rutting throughout the deck surface, and recent core samples indicate that the deck concrete is rapidly deteriorating.

As of February 2016, interim repairs begun in FY 15 have nearly been completed. The outer lanes that were previously closed due to accelerated deterioration have since been reopened. However, a 10-ton weight restriction (eliminating bus traffic on the bridge) will remain in place until a full rehabilitation is completed.

As the list of deficiencies increases, the Federal Highway Administration (FHWA) may recommend additional load restrictions, and could eventually recommend complete closure.

The FHWA has recommended an additional interim project to shore up the bascule span's trunnion posts (the columns which hold up the center span) to guard against a partial failure. This is an example of the costly work necessary to keep the Memorial Bridge open and safe before the extensive rehabilitation work can even begin.

Project Costs: The Arlington Memorial Bridge Repair project is expected to require between two and four years of construction. The project is currently at the Environmental Compliance and Preliminary Design stage. The total project costs are estimated at $250 million. Replacement of the center bascule span—as opposed to rehabilitation—has been identified as the most cost-effective solution. The cost of replacing the bascule span alone is estimated at $80 million.